

STRUCTURE SEARCH

=&gt; d his l32

(FILE 'HCAPLUS' ENTERED AT 09:36:31 ON 20 NOV 2007)

L32 17 S L31 AND L29

=&gt; d que stat l32

L2 5 SEA FILE=REGISTRY ABB=ON PLU=ON (298695-60-0/BI OR  
3047-32-3/BI OR 3897-65-2/BI OR 5945-33-5/BI OR  
9003-56-9/BI)

L5 STR



## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

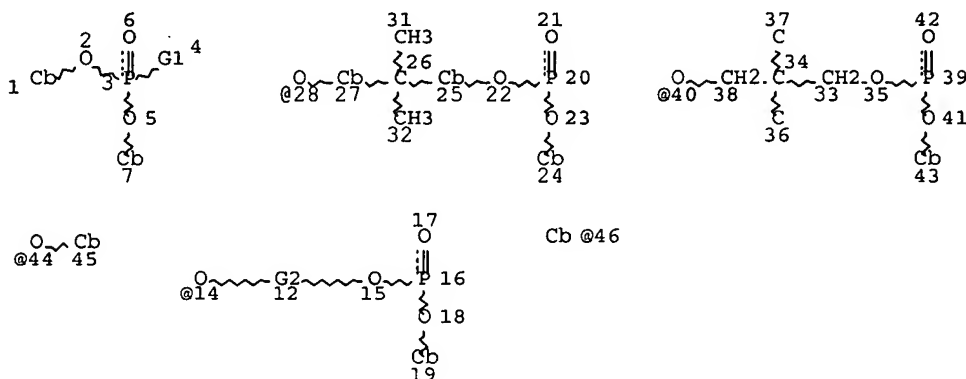
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 4

## STEREO ATTRIBUTES: NONE

L10 17331 SEA FILE=REGISTRY ABB=ON PLU=ON OC3/ES

L13 STR



VAR G1=14/28/40/44

VAR G2=46/AK

## NODE ATTRIBUTES:

NSPEC IS RC AT 36

NSPEC IS RC AT 37

CONNECT IS E1 RC AT 6

CONNECT IS E1 RC AT 17

CONNECT IS E1 RC AT 21

CONNECT IS E1 RC AT 42

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 1

GGCAT IS UNS AT 7

GGCAT IS UNS AT 19

GGCAT IS UNS AT 24

GGCAT IS UNS AT 25

GGCAT IS UNS AT 27

GGCAT IS UNS AT 43

LOW ACIDITY PHOSPHATE ESTERS

*This application is a 371 of PCT/US03/20013 filed on 06/24/2003.*

Aromatic oligomeric phosphates, which are used as

5 flame-retardants for thermoplastic resins, are made by reaction of POCl<sub>3</sub> with a biphenol followed by reaction with phenol (or by the reaction of diphenyl chlorophosphate with a biphenol) in the presence of a Lewis acid catalyst to thereby produce a crude phosphate product. Usually, extensive washing of such a product is needed to remove the catalyst and other acidic impurities that may negatively impact the properties of polymers (i.e., polycarbonates, polyesters, etc.) in which the phosphate ester is placed. Alternatively, the use of epoxides after removal of the catalyst to decrease acidity has been described in U.S. Patent No. 5,616,768 and in PCT International Patent Application No. PCT/US02/03522, filed Feb. 8, 2002.

It has been found that oxetanes are effective in decreasing the acidity of such phosphate esters. Moreover, it has also been found that an oxetane-treated phosphate ester showed superior hydrolytic stability when compounded with a polycarbonate/ ABS resin. While U.S. Patent No. 4,102,859 teaches the combination of neutral esters of phosphorous acid (i.e., phosphites) and oxetane compounds in plastics, particularly polycarbonate, it does not suggest the combination of phosphate esters and oxetane compounds.

The phosphate ester can be represented by the formula:

